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The Effect of Experimenter's Warmth/ Coldness on Intrinsic Motivation

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THE EFFECT OF EXPERIMENTER'S WARMTH/COLDNESS ON INTRINSIC MOTIVATION

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ABSTRACT

Individuals may approach an activity with either intrinsic or extrinsic motivation. Extrinsic motivational orientations are characterized by simplicity and predictability. Intrinsic motivation is characterized by novelty, complexity, and challenge. Task noncontingent rewards, in contrast to task contingent rewards, have been found to maintain or foster increases in intrinsic interest in a task. One explanation of this effect is that additional nonspecific factors like the perceived warmth of the experimenter was positively correlated with the noncontingent reward condition. To test this assumption, second grade subjects played with a game of intermediate complexity in one of four conditions: "cold" instructor with contingent reward, "cold" instructor with noncontingent reward, "warm" instructor with contingent reward, and "warm" instructor with noncontingent reward. In a subsequent free-choice period, simple, intermediate, and complex versions of the game, as well as other activities, were available. The "warm" instructor was expected to create a greater positive affect toward the task which was measured by the amount of time spent with the complex game during free-choice time. Contrary to expectations, no

significant difference was found between the four groups. Possible explanations of these findings are discussed.

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INTRODUCTION

Over the past 15 years, research has revealed the effect of rewards on intrinsic and extrinsic motivation. Deci (1971) has defined extrinsic versus intrinsic motivation as whether one receives an apparent reward for the performance of an activity versus receiving no apparent reward for the performance of an activity except the activity itself. Rewards offered contingently for engaging in an activity (contingent rewards) were found to promote extrinsic motivation (Deci, 1971). Behavior resulting from clear and powerful extrinsic constraints can be viewed as having extrinsic motivation (Lepper, 1983). Features of extrinsic motivation include predictability and simplicity since the desire is to get through the activity expediently in order to obtain the reward (Pittman, Emery, Boggiano, 1982). Studies have shown (Deci, 1971, 1972; Lepper, Greene & Nisbett, 1973) that contingent rewards may undermine continued interest in that activity/task when the contingent reward is no longer offered. Thus, approaching an activity from an extrinsic motivational orientation (i.e., for contingent reward) may, in fact, reduce the likelihood that the activity will be chosen in a subsequent free-choice period.

Behavior that results from the absence of extrinsic constraints is viewed as intrinsically motivated (Lepper, 1983). The activity is viewed as an end in itself. With this motivational orientation, experiences characterized by novelty, complexity, challenge, and the desire for mastery, according to one investigation, are sought for and preferred (Deci, 1972). Rewards given before the task was presented (noncontingent rewards) resulted in increasing or maintaining interest in the activity presented (Pittman et al., 1982). Pittman's explanation stated that the reward indirectly strengthened the intrinsic motivation or it may have produced a positive affect that made the subjects feel more secure or less concerned about "risking" the most complex version of the activity.

Pittman's suggestion that positive affect from noncontingent rewards maintained or increased intrinsic motivation led to the present proposal that positive affect received from the subject/instructor relationship will have an even greater positive impact on intrinsic motivation than receiving a noncontingent reward.

Nonverbal behavior has been shown to increase the attraction a client has for his/her counselor. For example, La Cross (1975) found that counselors who exhibited nonverbal behavior of smiles, headnods, eye contact and body lean towards subjects were seen as significantly more attractive and warm than those

counselors who did not manifest these behaviors, regardless of the subject's or counselor's sex. Nonaffiliative, nonverbal behavior consisted of little eye contact, body lean away from subject, no smiles nor headnods. D'Augelli (1974) found that of the nonverbal behaviors of smiles, headnods, looking down, staring away, and fiddling with something, that the nonverbal behaviors of smiling and nodding were perceived as being warm and accepting. Mehrabian (1971) found that the way one person expressed his or her liking for another is mainly in facial liking, then vocal liking, and then verbal liking. Facial expression thus had the greatest single impact on a measure of liking in an initial encounter. Therefore, an experimenter is likely to be perceived as warm if he/she will smile, nod his/her head in response to the subject, maintain appropriate eye contact, lean toward the subject, and use a soft tone of voice. An experimenter is likely to be perceived as cold if he/she does not smile, does not engage in headnods, if he/she stares away from the subject with little eye contact, leans away from the subject, and uses a loud tone of voice.

The expectation was that an experimenter who is perceived as warm would be associated with increased intrinsic motivation in contrast to a perceived cold experimenter, regardless of whether a reward was given

contingently or noncontingently for performing a task. Specifically, it was hypothesized that: 1) Subjects who are presented game instructions by an experimenter who models "warm/friendly" behavior will spend more time in a post free-choice situation with a complex version of a form-board game than subjects who are presented instructions modeled in a "cold/unfriendly" manner, and 2) There will be no differences in post free-choice play activities by subjects in contingent versus noncontingent reward conditions.

METHOD

Subjects

The subjects were 24 male and female children enrolled in the second grade of a private school in Apopka, Florida. The experiment was conducted in the child's school during weekday school hours. Children who volunteered and who had been given permission to participate by their parents or guardians were randomly assigned to the conditions of the experiment.

Target - Activity Materials

The target activity was similar to that described and used by Pittman et al. (1982). It consists of (a) a 25.5 cm x 40.75 cm game board consisting of 12 yellow shapes on a red background covered by plexi-glass, (b) 12 red shapes corresponding to the 12 yellow shapes on the game board, and (c) an electronic stopwatch that could be set for 60 seconds. The target activity had three levels of complexity, each with 12 red and yellow shapes and a game board. The complexity of the three levels were determined by the number of sides the red and yellow shapes had. The shapes were made by selecting random pairs of coordinates for each angle of each shape (Attneave, 1959). For the simple game, the number of sides

ranged from 3 to 10. The intermediate game had sides of 3, 4, 5, 6, 8, 10, 13, 16, 20, 25, 31, and 40. The complex game had sides from 13 to 40. There were two different random shapes from each of the six levels of complexity represented for both the simple and complex version of the game. The subjects had one minute to match the red shapes on top of the yellow shapes.

Experimental Conditions

Four experimental groups were formed: 1) contingent reward with a cold experimenter, 2) contingent reward with a warm experimenter, 3) noncontingent reward with a cold experimenter, and 4) noncontingent reward with a warm experimenter. The contingent reward groups received a prize for engaging in the intermediate game. The noncontingent reward group received a prize before being asked to play the intermediate game. Again, this procedure is similar to that described by Pittman et al. (1982).

Two female experimenters, ages 36 and 40, were used. One was used for the experimental conditions while the other, blinded to the condition the subject was in, asked the post-experimental questions to the subjects. Both experimenters were trained by the author by role-playing their parts. Previous to the experiment a pilot study was conducted to help improve their skills.

When the experimenter protrayed herself as cold she presented instructions in a matter-of-fact manner with no display of emotions. She avoided direct eye contact, encouraging headnods, leaned away from the subject, and used a louder tone of voice. When the experimenter protrayed herself as warm she presented the same instructions but with smiles, encouraging headnods, direct eye contact, a leaning forward body posture, and a softer tone of voice.

Procedure

Each child was randomly assigned to one of four equal groups. All children were told that the experimenter explaining the game could be either warm and friendly to them or cold and unfriendly. The subjects were also explained that after the experiment they would be asked if she was warm and friendly or cold and unfriendly. The noncontingent reward groups were immediately given a surprise can with a honor participation certificate inside it which they opened and kept. (In the Pittman et al., 1982, study the subjects were shown a surprise box and told they would receive it if they remained in the room for five minutes. However, this suggest a contingent reward for a desired behavior.) Upon receiving the honor certificate the subjects were given instructions for playing the intermediate game and asked to play it. The

contingent reward subjects were shown the surprise can and told that they would receive this if they played the intermediate game twice.

The experimenter then explained that they were to set the timer to one minute and that during that time they were to cover the yellow shapes on the game board with as many corresponding red shapes as they could. Each child was asked to play the game twice. After the game was explained, and upon completion of two games, subjects in all conditions were given a free-choice period. Subjects in the contingent reward conditions were given their surprise can in which was their honor participation certificate immediately upon completion of playing the game twice.

Free-choice Period

Each child was told that there was still some time left before he or she had to go back to class. The experimenter then brought out several other toys and games (including a Slinky, Tinker Toys, a small play piano, and the simple and complex version of the target activity) and explained that the timer was to be used in the same way as before. The instructor explained to the children that they could play with any of the games while she did some work. She then surreptitiously recorded the amount of time spent with each form of the target activity, as well as the number of trials with each form of the target

activity, during the subsequent five minute free-choice period.

Validating "Warm" vs. "Cold" Presentation Conditions

Following the free-choice period each subject was asked a series of questions by a second experimenter. These questions included: "Did the instructor look you in the eyes?", "Did she smile at you?", "Did she nod her head?", "Did she talk loudly or softly?", "Did she lean toward you or away from you?", and finally "Was the instructor friendly, some of the time friendly, or almost never warm and friendly?". If the subject's response disagreed with the condition he/she was in, the data from this subject was not included in the final analysis. A total of six subjects were excluded, two each from both "cold" experimenter groups and one each from both "warm" experimenter groups. Additional subjects were then used to make a total of six subjects per group.

Pilot Test

A pilot test was conducted to train the experimenters and to determine if the children could distinguish the difference between a warm experimenter and a cold experimenter. The subjects consisted of eight male and female children enrolled in the third grade of the same private school in Apopka, Florida. Children who volunteered and who had been given permission to participate by their

parents or guardians were used. The first subject was presented with the warm noncontingent condition. He responded appropriately to the post-experiment question of whether the experimenter was warm/friendly, some of the time warm/friendly, or almost never warm/friendly by stating she was warm and friendly. However, the next subject, when presented to the cold, noncontingent condition and asked by the second experimenter the post-experiment question, responded contrary to the condition by stating she was warm and friendly. Six more subjects were given the warm experimenter condition, alternating the reward condition, as adjustments were attempted. When stating before the experiment began that the experimenter would be either warm/friendly or cold/unfriendly and that afterwards they would be asked which she was, the children responded appropriately to the post-experiment questions.

RESULTS

The major dependent variable used was the number of seconds spent on each of the three shape games during the free-choice period. A two-way MANOVA (Brecht & Woodward, 1983) was completed. The type of instructor, either warm or cold, and the type of reward, either noncontingent or contingent, were the independent variables. An optimal weighting procedure for the dependent variables (scores from the simple, intermediate, and complex games) was utilized.

Using the Wildes Lambda R statistic (distributed as F's), the main effect for type of experimenter was not significant; $R(3,18)=.44$, $p=.73$, and the main effect for type of reward was not significant; $R(3,18)=2.02$, $p=.15$. The interaction was also not found to be significant; $R(3,18)=.15$, $p=.92$. See Table 1 for a presentation of means of time spent on the simple, intermediate, and complex games in the free-choice period.

A variety of post-hoc univariate comparisons were run in an attempt to explore any possible simple interactions. Only one such analysis approached statistical significance. A comparison of mean time spent with the intermediate game in the free-choice period between subjects in the noncontingent reward ($M=9.33$) versus

contingent reward (M=64.66) conditions approached statistical significance; $F(1,20)$=4.05, p=.055.

TABLE 1

MEANS OF TIME SPENT ON GAMES

	WARM EXPERIMENTER			COLD EXPERIMENTER		
	S	I	C	S	I	C
CONTINGENT REWARD	50.17	59.50	108.00	33.00	69.83	46.50
NONCONTINGENT REWARD	52.00	5.33	62.67	50.00	13.33	45.33

Note. S= simple game; I= intermediate game; C= complex game.

DISCUSSION

The above results failed to support the principle hypothesis of this investigation and thus it should be noted that "perceived warmth" of an experimenter may not be a relevant factor in controlling motivation to engage in a complex task. Several explanations, however, are offered below which may have obscured finding support for the expected relationship.

Consistent with expectations, the free-choice behavior of the children reflected higher average time spent with the complex game with the warm instructor (1024 seconds) compared to the cold instructor (551 seconds). However, it would appear that excessively large within group variability (12 out of 24 subjects did not play with the complex game and so had zero scores) obscured any potential conclusions. Additionally, having a larger subject population and having only the target games available during the free-choice period (other non-target games were available and were chosen by some of the children) could possible result in a significant finding. Also, the children had difficulty conceiving what a "cold" experimenter was like unless, as they stated, the experimenter actually began yelling at them. This was not done in fear of harming the child psychologically. But the difficulty

in conveying the appropriate condition of "cold" versus "warm" experimenter may have affected the outcome. Future research with an older population should be attempted.

An obtained mean difference between the contingent reward groups (776 seconds) and the noncontingent reward groups (112 seconds) on the intermediate level of complexity of the game was close to reaching statistical significance. This conforms to the previous studies (Pittman et al., 1982) which stated that contingent reward produced predictability in doing the task. Since they had been trained on the intermediate task and rewarded for this, the subjects spent time on the same game for which they were rewarded. However, the contingent "warm" experimenter group spent more time on the complex version of the game than any other group (648 seconds compared to 376 seconds, 279 seconds, and 272 seconds). This runs contrary to previous studies (Pittman et al., 1982) in which contingent rewards led to free-choice period of playing with the same game (intermediate) or the simple game. Involving a "warm" instructor with a contingent reward increased intrinsic motivation rather than maintaining or decreasing it.

Further studies would be useful in understanding the influence the type of instructor has on a subjects intrinsic motivation when given a task contingent reward. This

could have implications for those who seek to motivate children, especially teachers in a classroom situation.

APPENDIX A

PARENT INFORMATION AND CONSENT FORM

I am conducting an experiment for my Master's Thesis at the University of Central Florida under the direction/ supervision of Dr. John McGuire, Professor of Psychology. Children who participate in this experiment will have an opportunity to play a game in which they match various colored shapes to corresponding forms on a board. Some children will receive instructions from an experimenter who purposely smiles a lot, nods their head, makes good eye contact, etc. Other children will hear the instructions from an experimenter who does not frequently show these behaviors. Additionally, some children will receive a small prize ("honor certificate") prior to playing the game, while other children will be told they can earn the prize if they play the game. Following this, all children will be given a brief chance to play this game again or with some other toys like a "Slinky," "Tinker Toys," or a small play piano. Finally, each child will be asked by a second experimenter to respond to the following question: "Was the woman who played the game with you before always warm and friendly, or some of the time warm and friendly, or almost never warm and friendly?" Each child will be thanked warmly for participating and returned

to his/her class. Participation will take about fifteen minutes. Your child's teacher has agreed to make sure each participant has time to make up any work missed. Your child will be told that they can discontinue playing at any time. This experiment is hoped to answer some questions about what motivates children to be interested in pursuing certain tasks. We believe that factors like the warmth and friendliness of other people with whom the child interacts are more important than whether the child is specially rewarded for the behavior. We hope this study will be of aid to parents, teachers and others who are trying to motivate children.

A pilot study will first be done using third graders. (The actual experiment will involve using second graders.) We hope you will permit your child to participate. If you have any additional questions please contact me at the number listed below. Results of this research will be available through the University of Central Florida Library under my name or you may call me and I will send you a summary of the results.

I give permission for my child _____ to participate in the research described above.

_____ Parent/Legal Guardian

_____ Date

Phil Guikema, phone number 889-4730.

APPENDIX B

CONTINGENT REWARD WITH WARM EXPERIMENTER

1. All instructions will be given in the following manner:
   a. With smiles.
   b. With headnods.
   c. With direct eye contact.
   d. With a leaning forward body posture.
   e. A softer tone of voice.
2. Immediately state: "You can at anytime decide not to continue playing, just let me know."
3. Show subject a "surprise can" and state: "You will win the contents in this can if you play this matching figures board game twice."
4. Demonstrate and explain rules of game.
   a. Set timer for one minute.
   b. State: "During this time place the red shapes over the matching yellow shapes on the board."
5. Upon completion of playing the first game state: "Okay, all you have to do is play the game one more time and you can win the surprise box."
6. Upon completion of the second trial state: "Now that you played the game twice, here is the surprise box I promised you."

7. Free-choice time. State: "There is still some time left before you need to go back to class. Here are some other toys you can play with as well as a simpler form of this game, the same game, and a more complex, harder form of this game. You can play with any of these games while I do some paperwork."
8. Start timing for five minutes. Surreptitiously record the amount of time spent with each form of the target activity.

APPENDIX C

NONCONTINGENT REWARD WITH WARM EXPERIMENTER

1. All instructions will be given in the following manner:
   a. With smiles.
   b. With headnods.
   c. With direct eye contact.
   d. With a leaning forward body posture.
   e. A softer tone of voice.
2. Immediately state: "You can at anytime decide not to continue playing, just let me know."
3. Prize given. Show "surprise can" and state: "Here is an award for you today."
4. Demonstrate and explain rules of game. State: "I would like you to play this matching forms game twice. This is how you do it."
   a. Set timer for one minute.
   b. State: "During this time place the red shapes over the matching yellow shapes on the board."
5. Upon completion of playing the first game state: "Okay, play it one more time."
6. Free-choice time. State: "There is still some time left before you need to go back to class. Here are some other toys you can play with as well as a simpler

form of this game, the same game, and a more harder form of this game. You can play with any of these games while I do some paperwork."

7. Start timing for five minutes. Surreptitiously record the amount of time spent with each form of the target activity.

APPENDIX D

CONTINGENT REWARD WITH COLD EXPERIMENTER

1. All instructions will be given in the following manner:
   a. No display of emotions, done matter-of-factly.
   b. No direct eye contact.
   c. No headnods.
   d. Lean away from subject.
   e. A louder tone of voice but not shouting.
2. Immediately state: "You can at anytime decide not to continue playing, just let me know."
3. Show subject a "surprise can" and state: "You will win the contents in this box if you play this matching figures board game twice."
4. Demonstrate and explain rules of game.
   a. Set timer for one minute.
   b. State: "During this time place the red shapes over the matching yellow shapes on the board."
5. Upon completion of playing the first game state: "Okay, all you have to do is play the game one more time and you can win the surprise box."
6. Upon completion of second trial state: "Now that you played the game twice, here is the surprise box I promised you."

7. Free-choice time. State: "There is still some time left before you need to go back to class. Here are some other toys you can play with as well as a simpler form of this game, the same game, and a more complex, harder form of this game. You can play with any of these games while I do some paperwork."
8. Start timing for five minutes. Surreptitiously record the amount of time spent with each form of the target activity.

APPENDIX E

NONCONTINGENT REWARD WITH COLD EXPERIMENTER

1. All instructions will be given in the following manner:
   a. No display of emotion, done matter-of-factly.
   b. No direct eye contact.
   c. No headnods.
   d. Lean away from subject.
   e. A louder tone of voice but not shouting.
2. Immediately state: "You can at anytime decide not to continue playing, just let me know."
3. Prize given. Show "surprise can" and state: "Here is an award for you today."
4. Demonstrate and explain rules of game. State: "I would like you to play this matching forms game twice. This is how you do it."
   a. Set timer for one minute.
   b. State: "During this time place the red shapes over the matching yellow shapes on the board."
5. Upon completion of playing the first game state: "Okay, play it one more time."
6. Free-choice time. State: "There is still some time left before you need to go back to class. Here are some other toys you can play with as well as a simpler

form of this game, the same game, and a more harder form of this game. You can play with any of these games while I do some paperwork."

7. Start timing for five minutes. Surreptitiously record the amount of time spent with each form of the target activity.

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